國立臺灣科技大學
九十四學年度碩士班招生考試試題
系所組別：財務金融研究所碩士班
科　　目：財務管理

總分 100 分

1. The constant-growth DCF formula

$$P_0 = \frac{DIV_1}{r-g}$$

is sometimes written as

$$P_0 = \frac{ROE(1-b)BVPS}{r-bROE}$$

where P_0 is the current price of a share,

DIV_1 is the expected dividend per share in year 1,

r is the discount rate,
g is the anticipated growth rate,
BVPS is book equity value per share,
b is the plowback ratio,
ROE is the ratio of earning per share to *BVPS*.

Use this equation to show how the price-to-book ratio varies as *ROE* changes. What is price-to-book when *ROE* = *r*? (25 分)

2. The following table shows the sensitivity of four stocks to the three Fama-French factors in the five years to 2005. Estimate the expected return on each stock assuming that the interest rate is 5 percent, the expected risk premium on the market is 5.2 percent, the expected risk premium on the size factor is 3.2 percent, and the expected risk premium on the book-to-market factor is 5.4 percent. (These were the realized premia from 1970-2001.)

	Factor Sensitivity			
Factor	AT&T	EXXON	GE	XEROX
Market	1.01	0.29	0.82	1.17
Size*	0.39	0.74	1.19	1.15
Book-to-market**	0.51	-0.22	-0.63	0.41

*Return on small firm stocks less return on large firm stocks.
**Return on high book-to-market-ratio stocks less return on low book-to-market-ratio stocks. (25 分)

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3. Eric and Christie just purchased a boat. They financed the boat with a four-year (48-month) $1,500,000 loan. The loan is fully amortized after four years (i.e., the loan will be fully paid off after four years). Loan payments are due at the end of each month. The loan has a 12 percent nominal annual rate and the interest is compounded monthly. You are hired to manage their debt. You are required to answer the following questions and show your calculation to them.
(25 points)

(a) What are the monthly payments on the loan? (Hint: present value of annuity is useful to obtain the monthly amortization)
(b) What percentage of the total payments the first two years are going towards repayment of principal? (Hint: find two present values of annuities to derive the percentage)
(c) What is the effective annual rate on the loan?

4. NTUSTMBA Co. anticipates that its net income at the end of the year will be $2.4 million (before any recapitalization). The company currently has 900,000 shares of common stock outstanding and has no debt. The company's stock trades at $25 a share. The company is considering a recapitalization, where it will issue $10 million worth of debt at a yield to maturity of 10 percent and use the proceeds to repurchase common stock. Assume the stock price remains unchanged by the transaction, and the company's tax rate is 25 percent. What will be the company's earnings per share, if it proceeds with the recapitalization?
(25 points)

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